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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,176	11/29/2001	Miha Fuderer	NL 000159	8302

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Philips Electronics North America Corporation
580 White Plains Road
Tarrytown, NY 10591

EXAMINER

SHAW, SHAWNA JEANNINE

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,176

Applicant(s)

FUDERER ET AL.

Examiner

Shawna J. Shaw

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/29/01, 3/8/02.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 4 6) ☐ Other: _____

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The disclosure is objected to because of the following informalities: It appears that line 3 of page 5 should be changed to read either: --the position of vessel constrictions and their exact location within the patient are made directly visible—or -- the vessel constrictions and their exact location within the patient are made indirectly visible—because the actual vessels are not being imaged as a function of intensity, but

rather the amount of blood flow is reflected in the intensity signal, which in turn, is indicative of a constriction. Appropriate correction is required.

Claim Objections

3. Claim 3 is objected to because of the following informalities: In claim 3, it is confusing as to what is meant by "the intensity of the detected magnetic resonance signal is reproduced as a function of the catheter position." Is the term "position" here the same as that derived from the relevant spatial directions in claim 1, or is it rather referring to the presence of a constriction as reflected by the amount of blood volume in the vicinity of the microcoil (see p. 4 line 30 – p. 5 line 4)? If the latter is intended, the examiner suggests changing "the catheter position" in line 8 to --blood volume--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as

to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation "imaging blood vessels," and the claim also recites in parenthesis "angiography" which is the narrower statement of the range/limitation. Claim 4 recites the broad recitation "medium," and the claim also recites in parenthesis "blood" which is the narrower statement of the range/limitation. Claim 7 recites the broad recitation "flow speed . . . determined on the basis of the magnetic resonance signal," and the claim also recites in parenthesis "flow encoding" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 101

5. Claims 20 and 21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 20 and 21 claim computer software. The examiner suggests inserting –contained on a computer-readable medium—after "computer program product".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 6, 8-11, 13, 14, 16-18, 20 and 21 are rejected under 35

U.S.C. 102(b) as being anticipated by Watkins et al. of record.

Regarding claims 1, 2, 9, 11, 13, 14, 20 and 21, Watkins et al. teaches a computerized method for localizing a microcoil situated on an interventional instrument by means of a non-selective RF pulse and subsequent gradient pulses in temporal succession (col. 3 lines 17-19 - employing the tracking method of U.S. Pat. No. 5,307,808), and adjusting the field of view (FOV) to image the surroundings of the interventional instrument (col. 2 lines 4-10). Regarding claims 3, 5, 6 and 8, Watkins et al. further disclose using the device to image blood vessels as well as to use the obtained signals to differentiate between various tissue types and plaques (i.e., spectroscopic analysis - cp. p. 5 of the specification lines 24-28). See col. 1 lines 20-26. Regarding claims 16-18, Watkins et al. discloses an associated system (fig. 4) for carrying out the above method. See also col. 4 lines 33-39 regarding taking into account the sensitivity profile when forming an image.

7. Claims 1-3, 5-12, 16-18, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Leung et al. "Intravascular MR Tracking Catheter" of record.

Regarding claims 1-3, 5-12, 16 and 18, Leung et al. teaches a method and apparatus for tracking a microcoil situated in an interventional instrument by means of a non-selective RF pulse and subsequent gradient pulses in rapid temporal succession (p. 1266) and displaying the detected position on an angiographic survey image (p. 1268, fig. 4A and fig. 6). Leung et al. also discloses using the magnetic signals to

analyze/classify surrounding plaques (i.e., spectroscopic analysis - cp. p. 5 of the specification lines 24-28) and to perform flow quantitation (p. 1270). Regarding claims 9 and 17, Leung et al. teaches adjusting the field of view (FOV) based on the determined position (p. 1270). Further regarding claims 20 and 21, Leung et al. discloses software for executing the tracking method (p. 1266).

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 7, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watkins et al. of record in view of Lüdeke et al.

Regarding claim 4, Watkins et al. does not explicitly discuss a contrast agent. In the same field of endeavor, Lüdeke et al. performs microcoil tracking in the presence of

a contrast medium for enhancing the detection of the microcoil and its direct vicinity (col. 4 lines 55-58, col. 5 lines 20-25). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to employ a contrast medium as taught by Lüdeke et al. in the invention of Watkins et al. to limit signals to the vessels of interest as well as enhance detection of small coils in the presence of noise.

Regarding claim 7, Watkins et al. does not determine the flow speed of fluid in the vessel. In the same field of endeavor, Lüdeke et al. teaches that fluid flow surrounding a microcoil can be measured based on the coil signal. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to measure fluid flow in the vicinity of the microcoil as taught by Lüdeke et al. in the invention as taught by Watkins et al. to correct for artifacts caused thereby.

Regarding claims 15 and 19, Watkins et al. does not explicitly set forth a surface coil, however does recognize that such coils may successfully be employed if desired (col. 2 line 67 – col. 3 line 3). Lüdeke et al. teaches the use of surface/dedicated coils to also limit the area of interest (col. 6 lines 18-31). It would have been obvious at the time the invention was made to a person of ordinary skill in the art to incorporate a surface coil as suggested by Watkins et al. or as taught by Lüdeke et al. to image a select region larger than that obtainable by the microcoil and with high resolution.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mansfield et al. (Pat. No. 5,162,736) teaches that EVI is a generic term for all ultra-high speed volumar imaging (col. 2 lines 34-36).

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawna J. Shaw whose telephone number is (703) 308-2985. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on (703) 308-2262. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3590.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0858.

A handwritten signature in black ink, appearing to read 'Shawna J. Shaw', is written over the printed name.

Shawna J. Shaw
Primary Examiner
3/24/04